AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



EXAM QUESTION PACK

4.7.1 ADAPTATIONS, INTERDEPENDENCE AND COMPETITION (PACK 3)

SCORE	PERCENTAGE
/185	%

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Q1.

Copper compounds are found in water that has drained through ash from power stations. Invertebrate animals are used to monitor the concentration of copper compounds in water. First, scientists must find out which invertebrate animals can survive in a range of concentrations of copper compounds.

This is how the procedure is carried out.

- Solutions of different concentrations of a copper compound are prepared.
- Batches of fifty of each of five different invertebrate species, **A**, **B**, **C**, **D** and **E**, are placed in separate containers of each solution.
- After a while, the number of each type of invertebrate which survive at each concentration is counted.

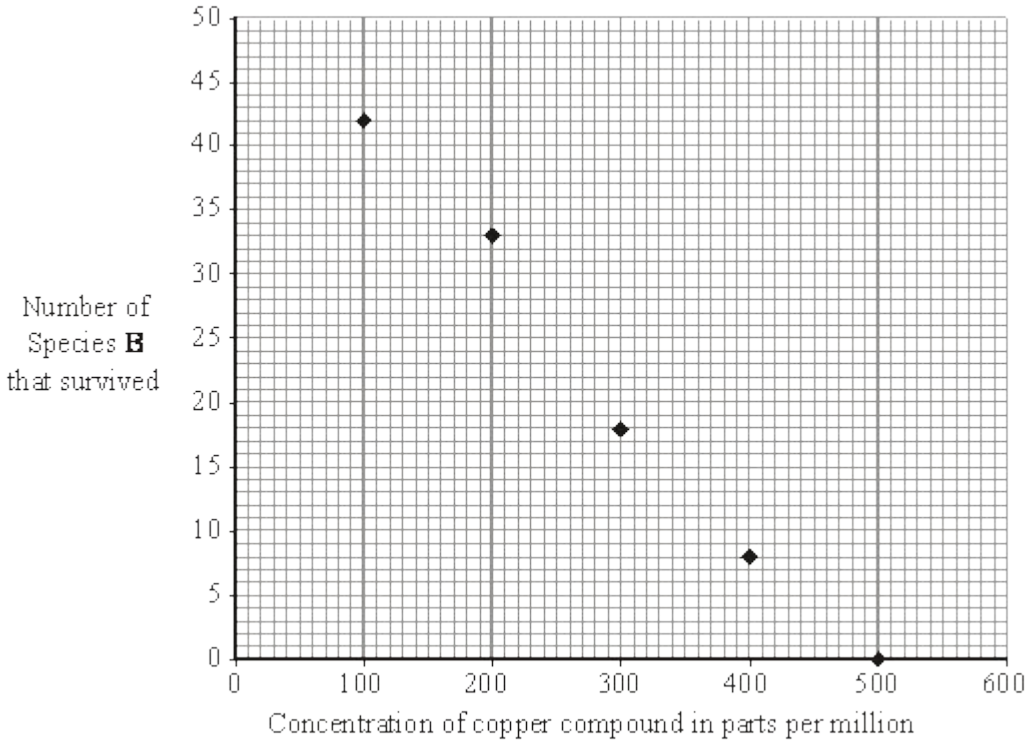
(a) Give **two** variables that should be controlled in this investigation so that the results are valid.

1. _____

2. _____

(2)

(b) The graph below shows the results for species **B**.



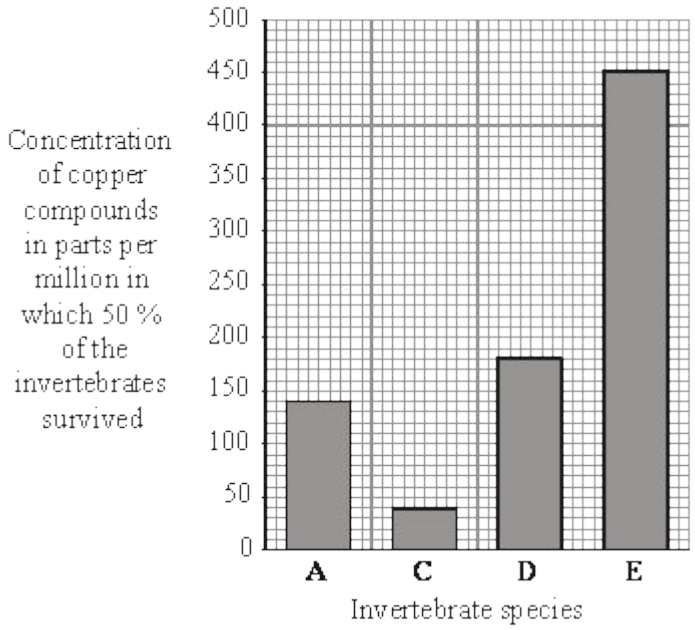
Use the graph to find the concentration of copper compounds in which 50% of Species **B** survived. To obtain full marks you must show clearly on the graph how you obtained your answer.

Concentration _____ parts per million

(2)

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(c) The graph below shows the results of the tests on the other four invertebrate species.



(i) Which species, **A**, **C**, **D** or **E**, is most sensitive to the concentration of copper in the water?

_____

Give the reason for your answer.

_____

_____

(1)

(ii) It is often more convenient to use invertebrates rather than a chemical test to monitor water for copper.

Suggest **one** explanation for this.

_____

_____

_____

_____

(2)

(Total 7 marks)

Q2.

The photograph shows a sand gazelle.

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The sand gazelle lives in the Arabian Desert where temperatures often reach 45 °C.

(a) The sand gazelle feeds only at dawn and at dusk. At other times it stays in the shade.

Suggest how this helps the animal to conserve water.

_____

_____

_____

_____

(2)

(b) During the dry season, the sand gazelle's liver and heart shrink in size. This reduces the amount of oxygen that the body needs.

Suggest how needing less oxygen helps the animal to conserve water.

_____

_____

_____

_____

(2)

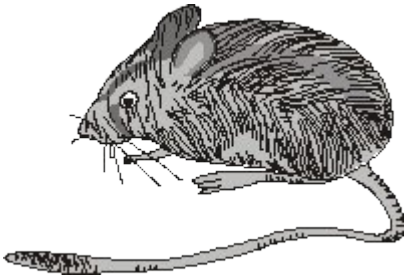
(Total 4 marks)

Q3.

The drawing shows a kangaroo rat.

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This rat lives in hot, dry deserts.



(a) Explain how each of the following features helps the kangaroo rat to survive in a hot, dry desert.

(i) It does not produce urine.

_____

_____

(1)

(ii) It lives in a burrow during the day, but comes out at night to search for food.

_____

_____

(1)

(iii) Its feet and its tail each have a large surface area.

_____

_____

(1)

(b) The kangaroo rat does **not** sweat.

Explain why **not** sweating could be dangerous for the animal.

_____

_____

(1)

(Total 4 marks)

Q4.

Organisms have adaptations that enable them to survive in extreme conditions.

(a) The photograph shows an arctic fox.

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This fox lives in the arctic, where it is very cold.

Suggest **two** ways in which the arctic fox is adapted for life in very cold conditions. Explain how each adaptation helps the arctic fox to survive in very cold conditions.

Adaptation 1 _____

_____

How this adaptation helps the arctic fox to survive in very cold conditions.

_____

_____

_____

Adaptation 2 _____

_____

How this adaptation helps the arctic fox to survive in very cold conditions.

_____

_____

_____

(4)

(b) The photograph shows an antelope that lives in a sandy desert.

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The antelope is prey to large cats such as cheetah.

Suggest **two** adaptations that help this antelope to avoid being killed by predators.
Explain how each adaptation helps the antelope to avoid being killed by predators.

Adaptation 1 _____

_____

How this adaptation helps the antelope to avoid being killed by predators.

_____

_____

_____

Adaptation 2 _____

_____

How this adaptation helps the antelope to avoid being killed by predators.

_____

_____

_____

(4)

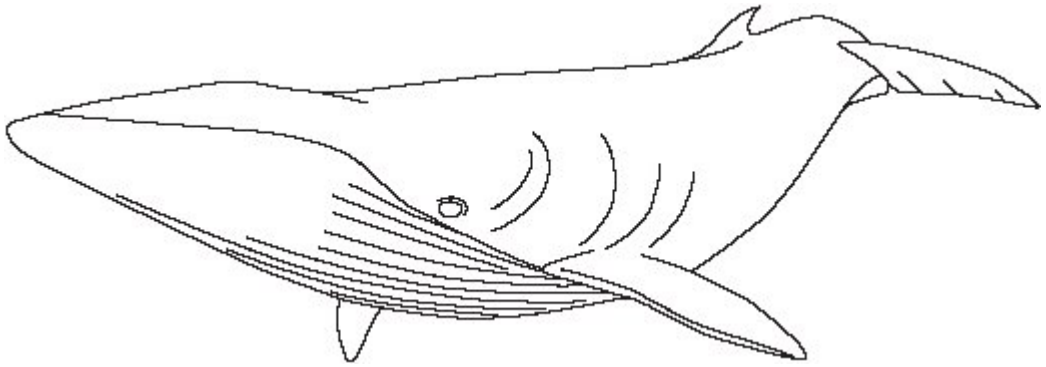
(Total 8 marks)

Q5.

(a) **Figure 1** shows a minke whale. Whales live in the sea.

Figure 1

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Write down **two** ways in which the body of the whale is adapted for swimming.

1. _____

_____

2. _____

_____

(2)

(b) **Figure 2** shows the skeleton of a minke whale.

Figure 2

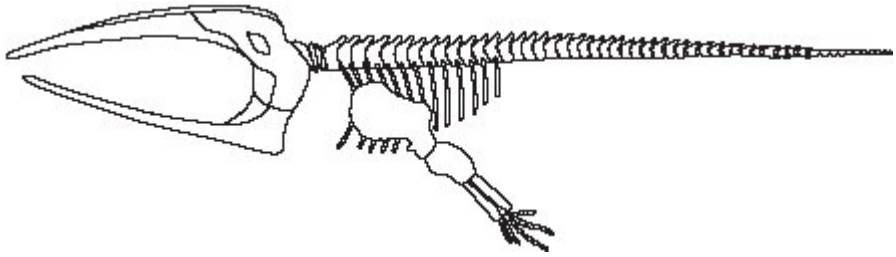
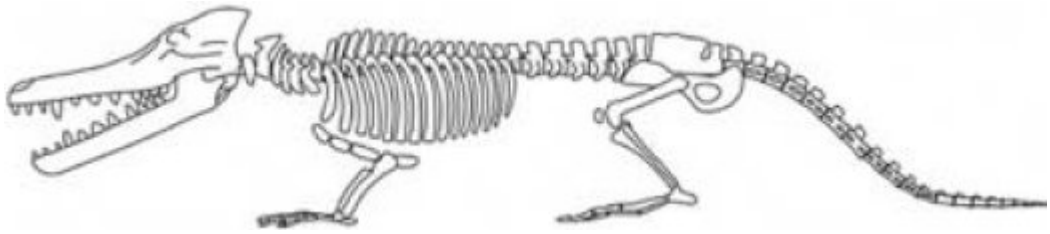


Figure 3 shows the fossil skeleton of an extinct whale.

Figure 3



Hans G Thewissen/ The Thewissen Lab

(i) Apart from size, give **two** differences between the skeleton of the minke whale and the fossil skeleton of the extinct whale.

1. _____

_____

2. _____

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_____

(2)

(ii) In each of the sentences below, draw a ring around the correct answer.

Life on Earth first developed more than three | billion / million / thousand | years ago.

Fossils | disprove / give evidence for / prove | the theory of evolution.

(2)

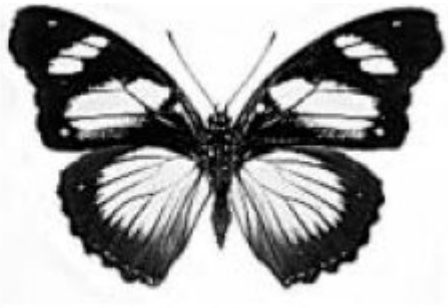
(Total 6 marks)

Q6.

The drawings show two different species of butterfly.



Amauris



Hypolimnas

- Both species can be eaten by most birds.
- *Amauris* has a foul taste which birds do not like, so birds have learned not to prey on it.
- *Hypolimnas* does **not** have a foul taste but most birds do not prey on it.

(a) Suggest why most birds do **not** prey on *Hypolimnas*.

_____

_____

_____

_____

(2)

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(b) Suggest an explanation, in terms of natural selection, for the markings on the wings of *Hypolimnas*.

_____

_____

_____

_____

_____

_____

_____

_____

(3)

(Total 5 marks)

Q7.

Animals and plants are adapted in different ways in order to survive.

(a) Plants may have to compete with other plants.

(i) Name **two** things for which plants compete.

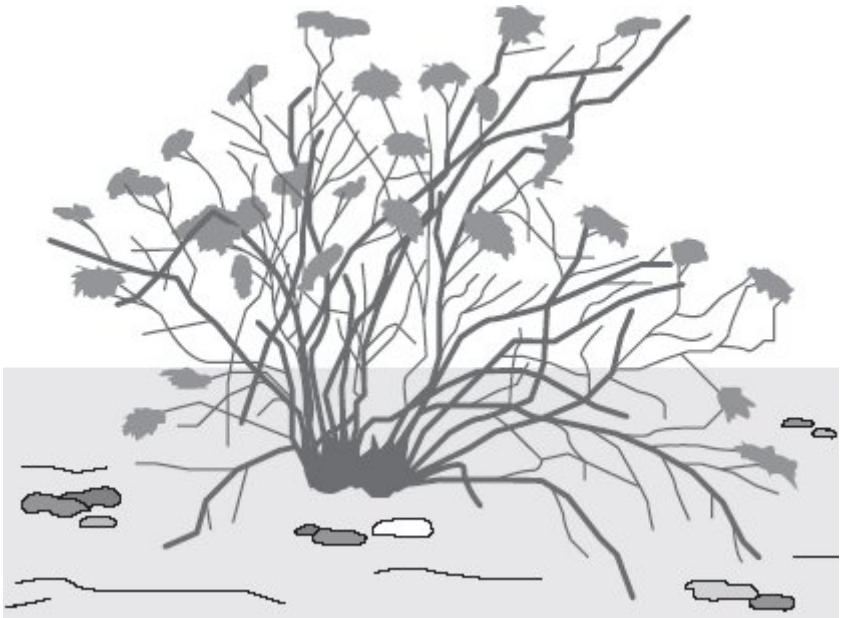
1. _____

2. _____

(2)

(ii) The drawing shows a creosote bush.

This bush lives in a desert.



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The creosote bush produces a poison that kills the roots of other plants.

How does this poison help the creosote bush to survive in the desert?

_____

_____

(1)

(b) The photograph shows an insect called a katydid.



The katydid is preyed on by birds.

How does the appearance of the katydid help it to survive?

_____

_____

_____

_____

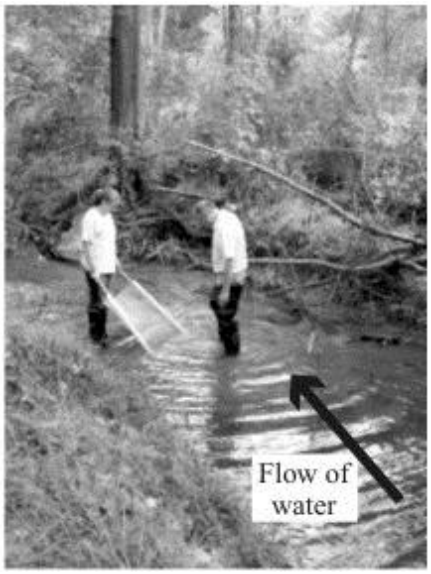
(1)

(Total 4 marks)

Q8.

Invertebrate animals are used to monitor pollution in streams. The photograph shows scientists collecting a sample of invertebrates from a stream.

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This is the method that they use.

- A 1 m^2 area of the bed of the stream is marked out.
- A net 1m wide is held by one person on the downstream side of the marked-out area.
- The other person uses their boots to gently move stones in this area of the stream bed. They do this for three minutes. This dislodges invertebrates which are then caught in the net.
- The invertebrates are then identified and counted.

(a) Name **two** control variables (variables which must be kept the same) in this investigation.

1. _____

2. _____

(2)

(b) Suggest **two** reasons why the results from a sample might not be accurate.

1. _____

_____

2. _____

_____

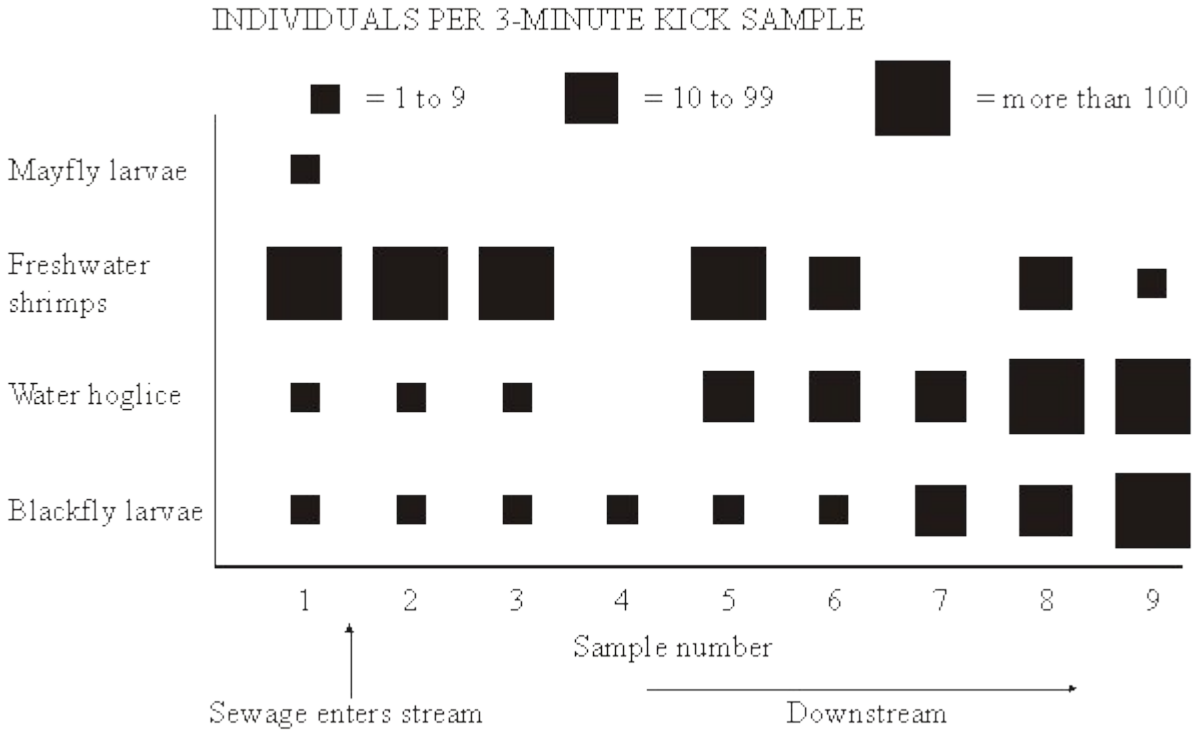
(2)

The technique described above was used to investigate the effect of sewage on stream invertebrates.

- Sample 1 was taken upstream of the point where the sewage entered the stream.
- Samples 2–9 were taken at regular intervals downstream of the sewage inflow.

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The graph shows the results.



(c) What was the range of the number of blackfly larvae that could be found in sample 7?

_____

(1)

(d) Describe, as fully as you can, how the number of water hoglice changed downstream from where sewage entered the stream.

_____

_____

_____

_____

(2)

(e) Which of the four invertebrates is the best indicator species for water which is **not** polluted by sewage?

_____

Give the reason for your answer.

_____

_____

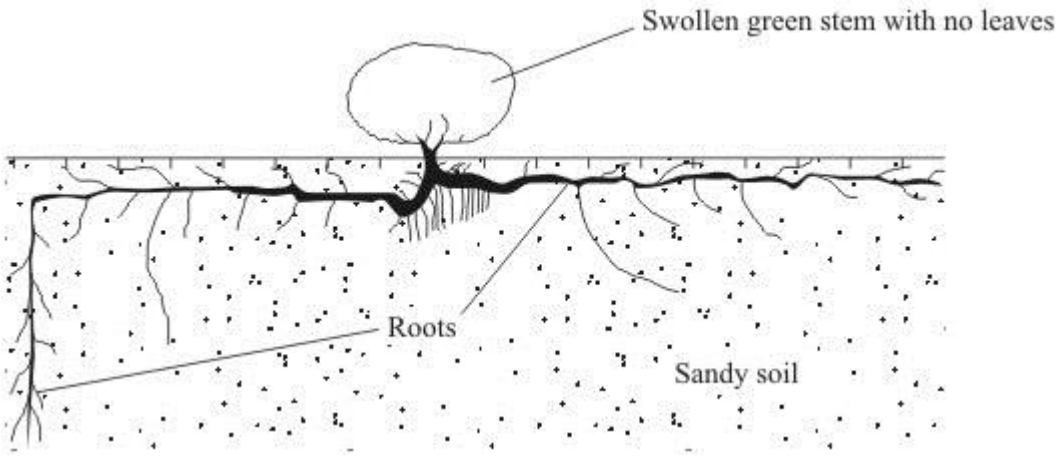
(2)

(Total 9 marks)

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Q9.

The drawing shows a bean caper plant.



The bean caper plant lives in hot desert conditions.

Explain two ways in which the bean caper is adapted for life in a hot desert.

Adaptation 1 _____

_____

How this adaptation helps the bean caper to survive

_____

_____

Adaptation 2 _____

_____

How this adaptation helps the bean caper to survive

_____

_____

(Total 4 marks)

Q10.

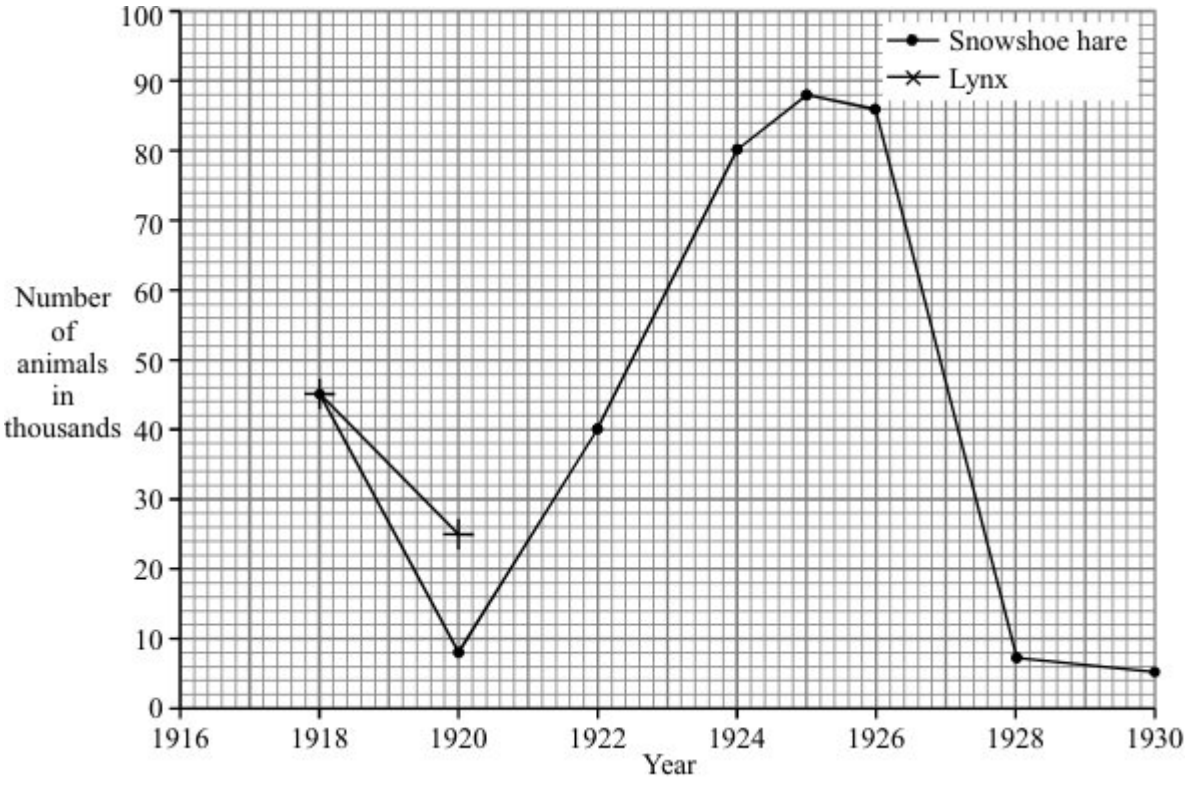
The lynx is a wild cat which lives in Canada. The table shows the number of lynx trapped in a part of Canada in certain years.

Year	Number of lynx in thousands
1918	45
1920	25
1922	10

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1924	20
1926	40
1928	50

The snowshoe hare is another wild animal found in Canada. The graph shows the number of snowshoe hares trapped in the same years. The lynx eats the snowshoe hare.



(a) Draw a graph of the data in the table. The first two points have been plotted for you.

(2)

(b) From your graph, predict how many lynx were trapped in 1925.

_____ thousand

(1)

(c) Use the information to answer the following.

(i) What would you expect to happen to the number of lynx trapped in 1930? Draw a ring around your answer.

rise **fall** **stay the same**

(1)

(ii) Give a reason for your answer to part (c)(i).

_____

_____

(1)

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(d) The lynx is a predator. What is a predator?

_____

_____

(1)

(Total 6 marks)

Q11.

The table compares some features of a polar bear and the Malayan sun bear. The polar bear lives in the Arctic where the climate is cold. The Malayan sun bear lives in warm tropical forests.

	Polar bear	**Malayan sun bear**
Colour of fur	White	Black
Thickness of fur in cm	5	2
Thickness of fat layer under skin in cm	11	1
Surface area compared to body size	Low	High

Use information from the table to explain how the polar bear is better adapted than the Malayan sun bear for survival in arctic conditions.

To gain full marks in this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(Total 5 marks)

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Q12.

A selective herbicide (a type of pesticide) can be used to kill weeds growing among crop plants.

The table shows the result of adding different amounts of a selective herbicide to a rice crop.

Herbicide added in kg per hectare	Amount of rice produced in tonnes per hectare	Percentage cover of weeds
0.0	50	85
1.7	70	32
3.4	76	24

(a) As more herbicide is applied, what happens to:

(i) the amount of rice produced;

_____

(1)

(ii) the percentage cover of weeds?

_____

(1)

(b) Suggest **two** reasons why rice does not grow well when there are a lot of weeds present.

1. _____

_____

2. _____

_____

(2)

(c) Suggest **one** possible danger of spraying crops with pesticides.

_____

_____

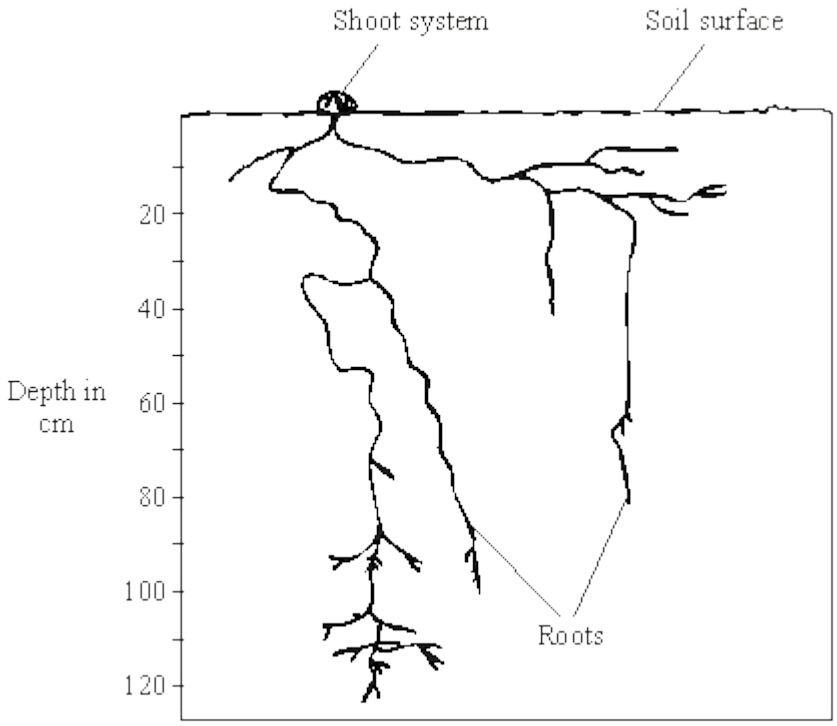
(1)

(Total 5 marks)

Q13.

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The diagram shows the desert plant, *Fredolia.*



Describe and explain **three** adaptations of *Fredolia,* which you can see in the diagram, that help it to survive in dry conditions.

1. _____

_____

2. _____

_____

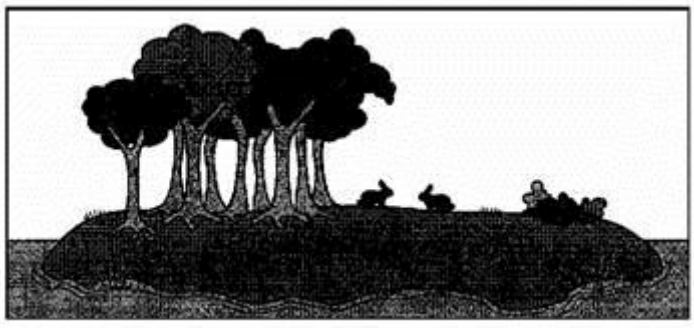
3. _____

_____

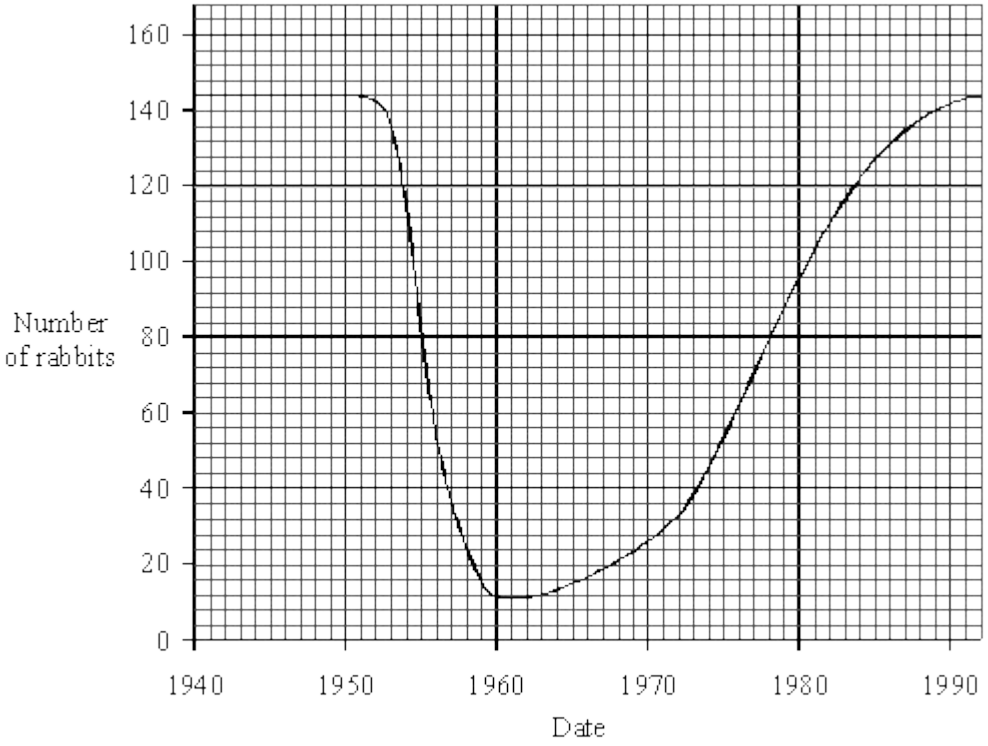
(Total 3 marks)

Q14.

A population of rabbits lived on a small island. The graph shows their population over the last 50 years.



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(a) (i) How many rabbits were there on the island in 1950?

_____

(1)

(ii) Give **one** year when there were 88 rabbits on the island.

_____

(1)

(b) (i) Calculate the decrease in rabbit population between 1950 and 1960.

_____

(1)

(ii) Suggest a reason why the rabbit population fell in these years.

_____

(1)

(c) The most rabbits on the island is always about 140. Suggest a reason for this.

_____

_____

(1)

(Total 5 marks)

Q15.

Animals and plants are adapted to live in their environment.

(a) Explain how these adaptations help animals keep warm in cold conditions.

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(i) A thick fur coat

_____

_____

(2)

(ii) A thick layer of fat beneath the skin

_____

_____

(2)

(iii) A large body

_____

_____

(2)

(b) Lots of animals are *camouflaged.* What does *camouflaged* mean? Give **one** advantage of being *camouflaged.*

_____

_____

_____

(2)

(c) Describe **two** different ways that plants could be adapted to survive in dry conditions like a desert.

_____

_____

_____

_____

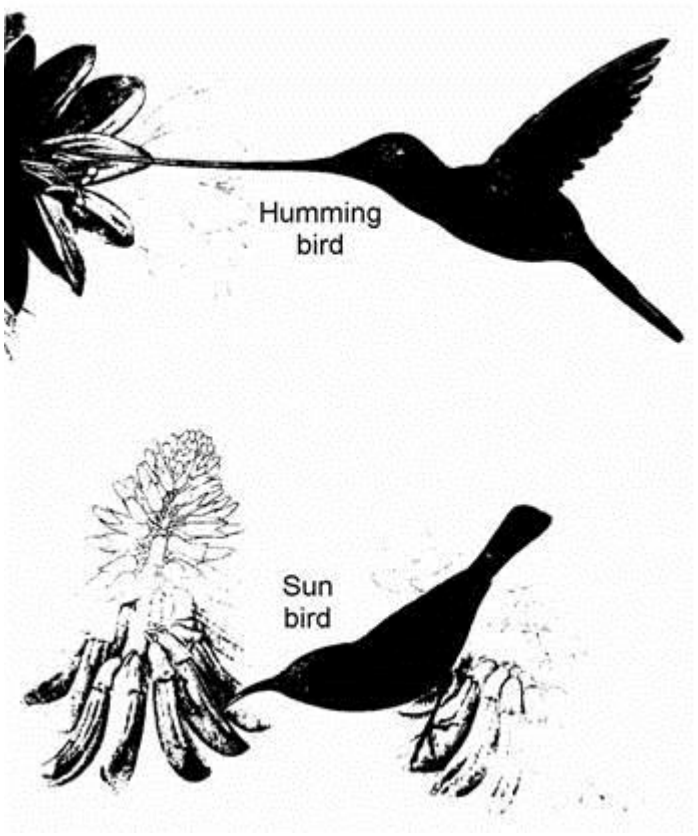
(2)

(Total 10 marks)

Q16.

The drawings show a humming bird and a sun bird feeding.

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Both of these birds feed on nectar which is a sugary liquid found inside flowers.

Use the information from the drawings to answer the following questions.

(a) Describe, as fully as you can, how the humming bird is adapted for feeding on nectar.

_____

_____

_____

_____

(2)

(b) The sun bird has a different method of obtaining nectar.

Describe, as fully as you can, how the sun bird is adapted for feeding on nectar.

_____

_____

_____

_____

(2)

(Total 4 marks)

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Q17.

The table below shows what some of the living things in a wood do at different times of the year.

Organism	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Oak tree												
Hazel (bush)												
Primrose (plant)												
Bluebell (plant)												
Squirrel (mammal)												
Owl (bird)												

	In leaf
	In flower
	Mating season
	Rearing young

Use information from the table to help you to answer the following questions.

(i) For how many months are there leaves on the oak trees? _____

(1)

(ii) There are no leaves on the oak tree for the whole of one season. Which season is this?

_____

(1)

(iii) Suggest **one** change in the environment which might cause oak trees to lose their leaves.

_____

_____

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(1)

(iv) Bluebells live on the floor of the wood. Explain why it is an advantage to the bluebells to produce leaves in February rather than later in the year.

_____

_____

_____

_____

(2)

(v) When do the owls mate? _____

(1)

(vi) Explain **one** advantage to the owls of rearing their young in summer rather than in winter.

_____

(1)

(Total 7 marks)

Q18.

(a) One food chain in the wood is:

Hazel tree nuts → squirrels → owls

(i) What does this food chain tell us?

_____

_____

(2)

(ii) Which **one** of the organisms in the food chain is a producer?

_____

(1)

(iii) This year the hazel bushes have produced very few nuts.

Explain, as fully as you can, how this might affect the populations of:

1. squirrels;

_____

_____

_____

_____

2. owls.

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_____

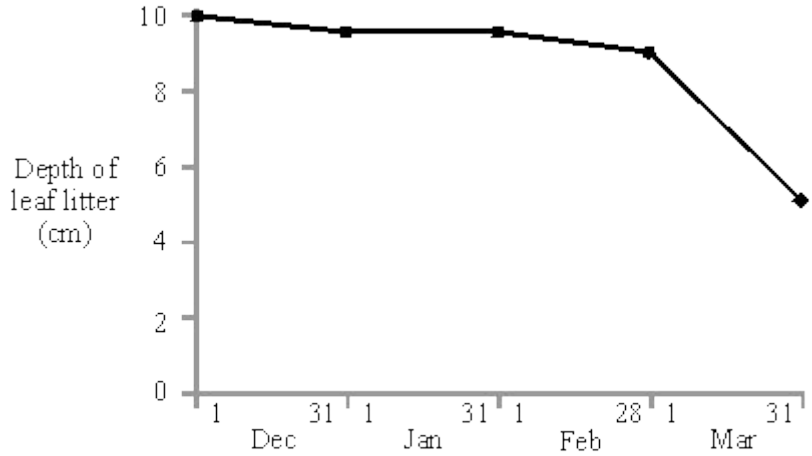
_____

_____

_____

(4)

(b) An area of the floor of the wood 1 m² was fenced off so that animals could not reach it. The graph below shows the depth of leaf litter (dead leaves) inside the fence over the next few months.



Explain, as fully as you can,

(i) why the depth of the leaf litter decreased;

_____

_____

_____

(1)

(ii) how this decrease happened.

_____

_____

_____

(1)

(iii) In which month does leaf litter disappear fastest? Explain why.

_____

_____

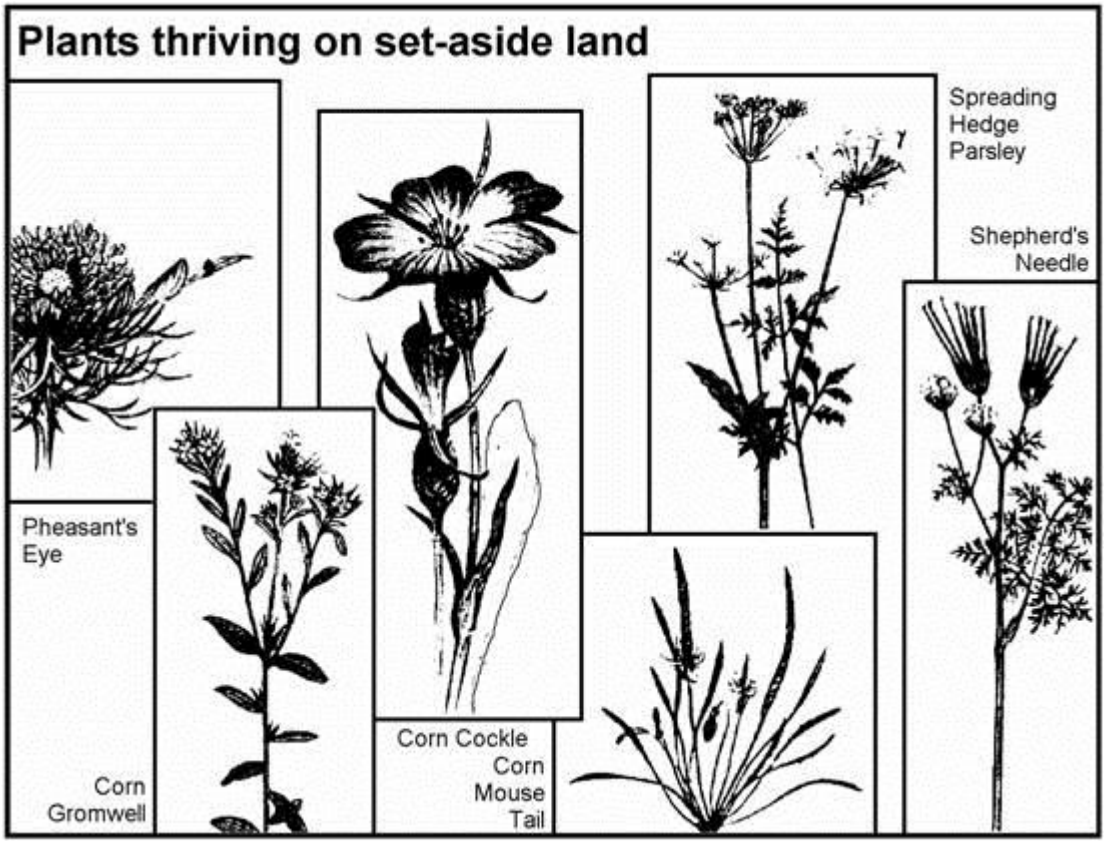
_____

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(2)

(Total 11 marks)

Q19.



The drawings and text for this question are based on an article from The Independent newspaper.

Some of Britain's rarest wild flowers are likely to make a come-back thanks to an EC set-aside regime in which 15 per cent of arable land has been taken out of production.

As a result of this set-aside, shepherd's needle, pheasant's eye, corn gromwell, corn cockle, spreading hedge parsley and corn mouse tail are now thriving once again. They were once common in and around cereal fields and were even regarded as weeds, but were swept to near extinction by the intensification of agriculture after the Second World War. Their small, pale flowers are hardly seen. These plants cannot compete in fields where modern cereal crops are cultivated. Nor, however, do they flourish in semi-natural or wild habitats where nature is left to its own devices. They need farmland which is lightly tilled and cut once a year.

Dr Nick Sotherton, lowland research manager with the Game Conservancy Council, says that these species will flourish under the new rotational set-aside regime, in which farmers are compensated for taking land out of production in an attempt to end crop surpluses.

EC agriculture ministers are meeting to decide how much land should be used for rotational set-aside – in which a field is taken out of production for just one year before being replanted – and how much should be set-aside permanently. The ultimate set-aside is a wood, and Britain is seeking a forestry option.

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The Game Conservancy Council says that the rotational scheme can benefit ground nesting birds as well as rare flowers that will not be helped by longer-term set-aside. But Richard Knight of the Wildlife Advisory Group, says "Non-rotational is better because it gives flora and fauna a chance to get well established".

"Intensification of agriculture" has led to the creation of artificial ecosystems.

(a) Explain how the creation of artificial ecosystems may have led to the near-extinction of the plants seen in the picture above.

_____

_____

_____

_____

_____

_____

(4)

(b) What would you recommend to ministers meeting to decide a policy involving rotational set-aside and permanent set-aside? Explain the reasons for your answer.

_____

_____

_____

_____

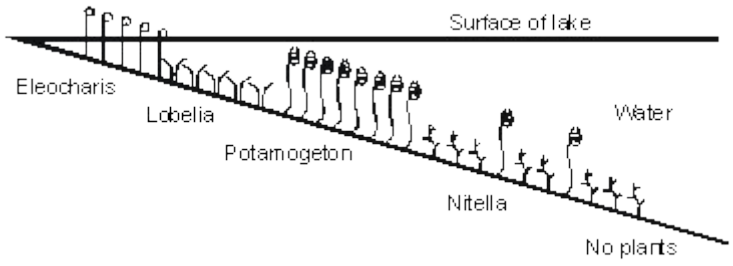
_____

(4)

(Total 8 marks)

Q20.

This is a diagram of a belt transect showing the major types of plants growing on the bottom of a lake.



(a) Suggest, and explain, **two** reasons why a much smaller population of Nitella plants is found amongst the Potamogeton plants than further down in the lake.

1. _____

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_____

_____

_____

2. _____

_____

_____

_____

(4)

(b) Describe how you would use the belt transect technique to measure the abundance and distribution of plants which live on the bottom of a shallow lake.

_____

_____

_____

_____

_____

_____

(3)

(Total 7 marks)

Q21.

Professor John Lawton researches into the problem of controlling the spread of bracken. Bracken is a fern which threatens upland farms, partly because it poses a health risk to people and animals.

Professor Lawton is waiting for government permission to release the Conservular caterpillar which feeds on the bracken.

The Secretary of State has to decide whether the Conservular caterpillar can be released.

The article printed below describes some of the problems faced by the Secretary of State.

David the caterpillar to bracken's Goliath

Yorkshire farmer Maurice Cottrill has just forked out £500 to have a helicopter hover over his land and spew out gallons of chemicals aimed at destroying one of the most pervasive and dangerous weeds known to man – bracken. In a little box in a laboratory near Ascot, Berkshire, lies a tiny caterpillar which could have done the job for nothing.

Whether or not that caterpillar and thousand of its chums will ever be let loose on the massive carpet of bracken that is sweeping over Britain at the rate of 53 square kilometres a year has to be decided by the Secretary of State for the Environment.

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Weed control through the release of imported insects has never been tried in Britain before. If the Secretary of State permits the experiment, the caterpillar is in for the feast of its life, because five years of painstaking research have proved that bracken is its only food. However, is that the full story? Will the beast stop there, or will it go on, wreaking unforeseen devastation. Can scientists predict what will happen when imported insects are released into the wild?

Bracken is poisonous – more than 20 000 sheep and 1 000 cattle suffer poisoning each year. Its spores are carcinogenic, posing a threat to hill walkers. Bracken costs a depressing £4m a year to control while rendering useless grazing land valued at £5m annually. "Bracken is one factor which is leading to hill farming becoming uneconomic", says the director of the Ramblers Association. "We are worried about that because, the more uneconomic hill farms become, the more prospect there is of the forestry industry taking over."

The National Farmers Union are concerned about the consequences of the caterpillar getting out of control. What if it started consuming garden ferns? What if it loved potatoes? On the other hand, the caterpillar might help to preserve important uplands where wildlife flourishes when bracken is kept at bay. However, the experiment takes the scientists into unknown territory.

World-wide, 94 species of weeds have been controlled by biological releases involving 215 types of animal in 50 countries. Professor Lawson says that approximately one-third have achieved effective control and the remainder have failed.

Upland farms are artificial ecosystems, created and maintained mainly for the rearing of sheep and cattle. These farms are being threatened by the spread of bracken. Up to now the only treatment for bracken has been to use herbicides.

Use the article to explain, as fully as you can, what advice you would give the Secretary of State.

Explain the arguments for and against that lead to your decision.

You will **not** receive marks for simply copying extracts from the article.

(Total 8 marks)

Q22.

Squirrels live mainly in woodland. There are two types of woodland in Great Britain: coniferous woodland containing trees such as Scots pine and Norway spruce, and broad-leaved woodland containing trees such as Hazel, Beech, Oak, Sycamore and Sweet chestnut.

The red squirrel is a native species, the grey squirrel was introduced at the beginning of this century. Since the introduction of the grey squirrel, the red squirrel has largely disappeared from broad-leaved forests in England.

(a) Suggest **two** factors which might have caused the fall in the population of red squirrels.

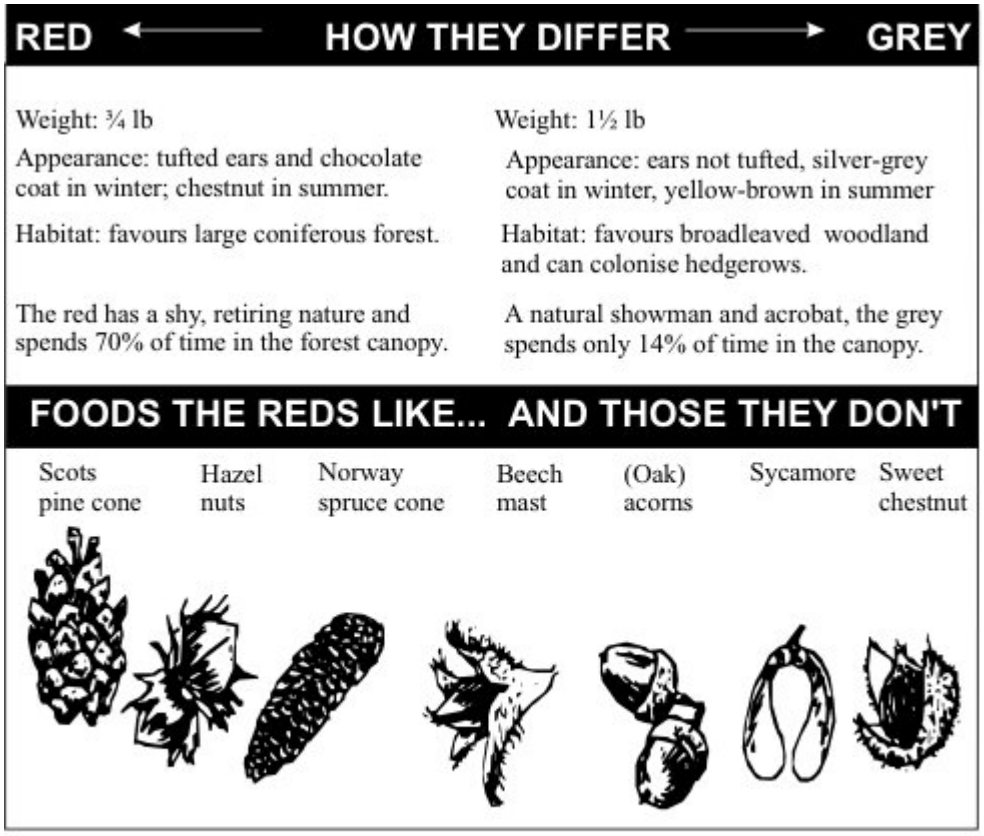
1. _____

2. _____

(2)

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(b) The drawing gives information about the two types of squirrel.



Up to six times as many grey squirrels as red can populate broadleaved woodlands, while red squirrels can match the density of greys only in coniferous forests

Using **only** information given above, suggest **two** reasons why the population of grey squirrels has risen whereas the population of red squirrels has fallen.

1. _____

_____

2. _____

_____

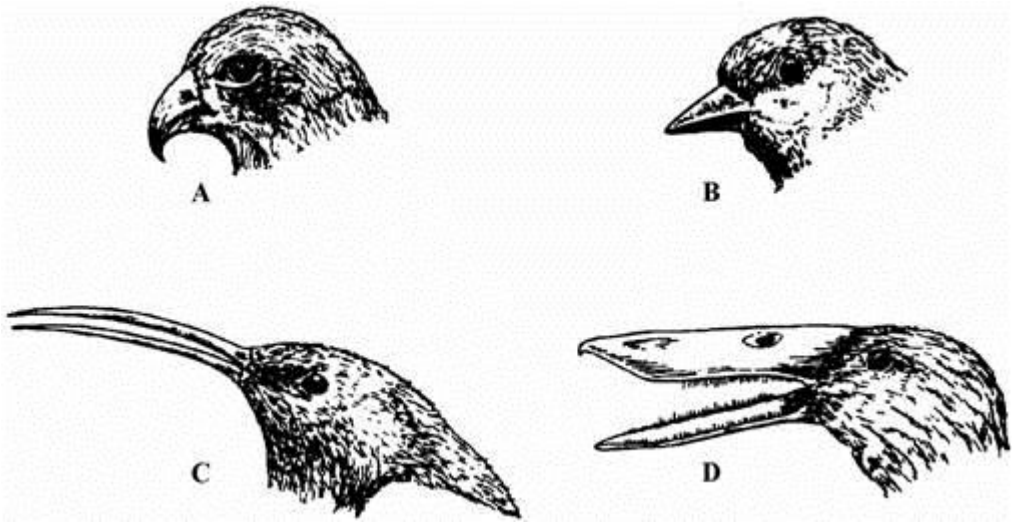
(2)

(Total 4 marks)

Q23.

The drawings show the heads of four birds, not drawn to scale. The birds feed in different ways.

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Which of the birds, A, B, C or D, is best adapted for:

1. tearing flesh _____

2. finding insects in cracks in the ground _____

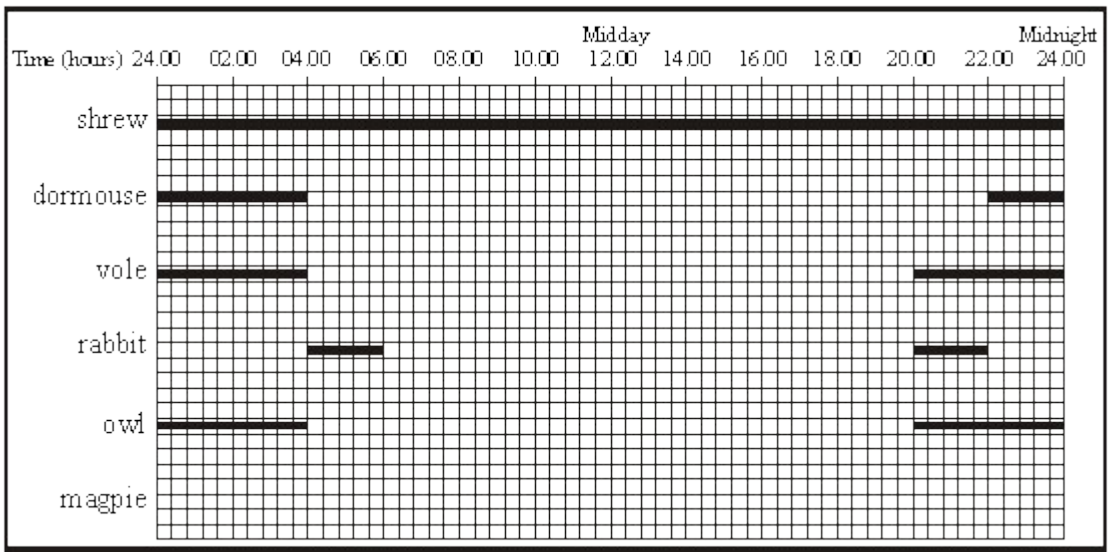
3. crushing fruit _____

4. sieving small animals from mud? _____

(Total 4 marks)

Q24.

The chart is about some of the animals which live in a forest. It shows the time of day when they search for food.



(a) The dormouse searches for food from 22.00 until 04.00 hours.

When does the owl search for food? _____

(1)

(b) The magpie searches for food from 06.00 until 20.00 hours.

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Add this information to the diagram.

(1)

(c) The vole searches for food only between 20.00 and 04.00 hours.

Suggest an explanation for this.

_____

_____

_____

_____

(2)

(Total 4 marks)

Q25.

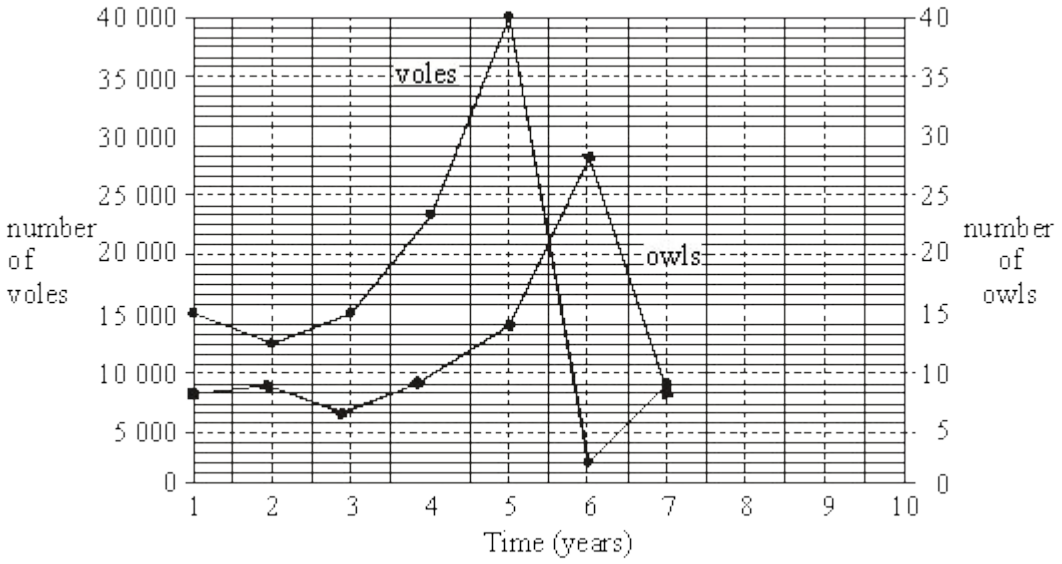
The table shows the results of a ten-year study of the owls and voles in a forest.

YEAR	NUMBER OF VOLES (TO THE NEAREST THOUSAND)	NUMBER OF OWLS
1	15 000	8
2	12 000	9
3	15 000	7
4	23 000	9
5	40 000	14
6	2 000	28
7	9 000	8
8	19 000	9
9	10 000	14
10	8 000	16

The data for years 1 - 7 have been plotted on the grid below.

(a) Complete the graph by plotting the data for years 8 - 10.

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(2)

(b) (i) What is the main factor which limits the size of the owl population?

_____

(1)

(ii) Suggest **two** reasons other than owl predation, for the large fall in the numbers of voles between years 5 and 6.

1. _____

_____

2. _____

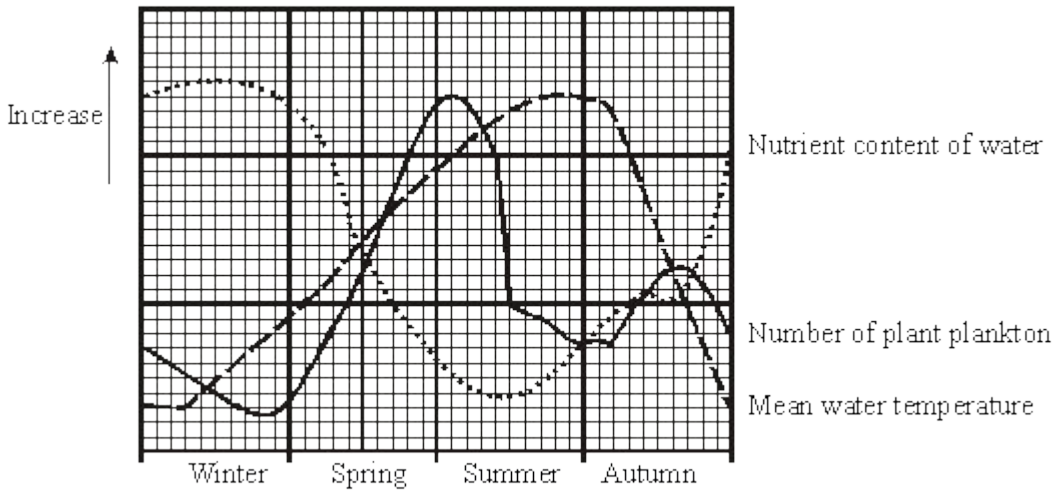
_____

(2)

(Total 5 marks)

Q26.

Plant plankton are aquatic microscopic organisms that photosynthesise. The graph shows the numbers of plant plankton in the North Sea at different times of the year.



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Use the data and your knowledge of photosynthesis and growth to explain:

(a) why numbers of plant plankton were low in winter but increased rapidly during the spring,

_____

_____

_____

_____

_____

_____

(3)

(b) the reduction in numbers of plant plankton in the early summer.

_____

_____

_____

_____

(1)

(Total 4 marks)

Q27.

The gemsbok is a large herbivore that lives in herds in desert areas of South Africa. Gemsboks feed on plants that are adapted to living in dry conditions. There are not many rivers, lakes or ponds that can provide drinking water for the animals. The desert areas are hot during the day but cool at night. As the air cools at night it becomes moist, and the plants absorb the moisture.

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(a) A few lions live in the desert areas. They hunt and feed on the gemsboks.

Use information from the drawing of the gemsbok to suggest **two** ways in which it could avoid being killed by lions.

1. _____

_____

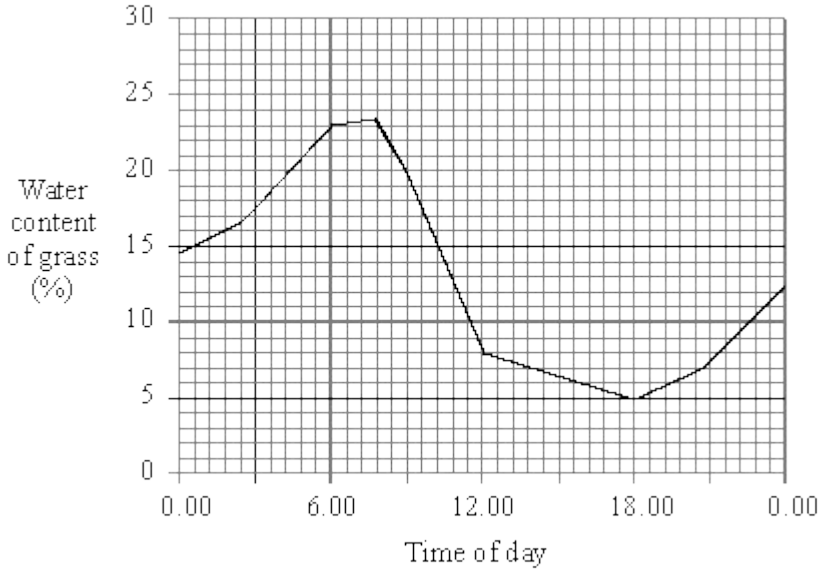
2. _____

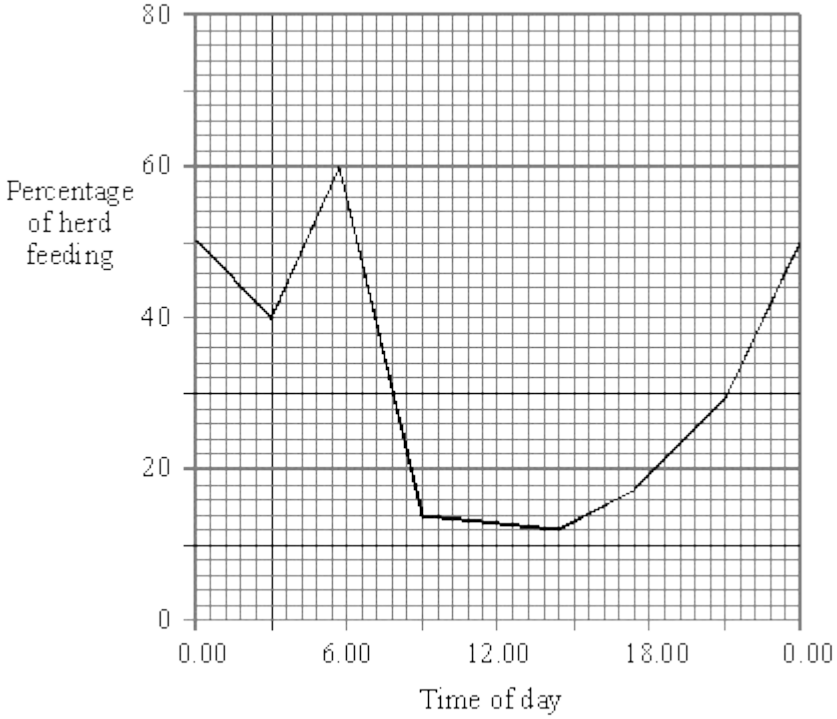
_____

(2)

(b) The graphs show the water content of the desert grass and the times of day that the gemsboks feed.

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(i) Describe how the water content of the grass changes during the day.

_____

_____

(1)

(ii) Suggest why the water content of the grass changes.

_____

_____

(1)

(c) (i) Between which times of day are more than 25% of the herd feeding?

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_____ and _____

(1)

(ii) Suggest an advantage to the gemsbok of feeding mainly at these times.

_____

_____

_____

_____

(2)

(Total 7 marks)

Q28.

Read the passage.



Glutton up a gum tree

Along the banks of the Cygnet River on Kangaroo Island, the branches of the dying gum trees stretch out like accusing fingers. They have no leaves. Birds search in vain for nectar-bearing flowers.

The scene, repeated mile upon mile, is an ecological nightmare. But, for once, the culprit is not human. Instead, it is one of the most appealing mammals on the planet – the koala. If the trees are to survive and provide a food source for the wildlife such as koalas that depend on them, more than 2000 koalas must die. If they are not removed the island's entire koala population will vanish.

Illegal killing has already started. Worried about soil erosion on the island, some farmers have gone for their guns. Why not catch 2000 koalas and take them to the mainland? "Almost impossible," says farmer Andrew Kelly. "Four rangers tried to catch some and in two days they got just six, and these fought, bit and scratched like fury."

Use the information from the passage and your own knowledge and understanding to give the arguments for and against killing koalas to reduce the koala population on Kangaroo Island.

_____

_____

_____

_____

_____

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_____

_____

(Total 4 marks)

Q29.

Read the passage.



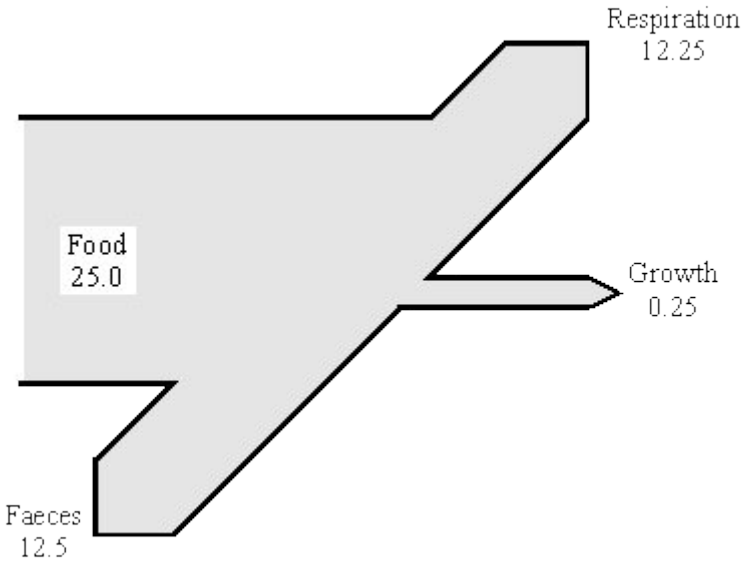
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The diagram shows the flow of energy through a koala.
The numbers show units of energy.



(i) Calculate the percentage of the food intake which is converted into new tissues for growth. Show your working.

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_____ %

(2)

(ii) Give **three** different ways in which the koala uses the energy released in respiration.

1. _____

_____

2. _____

_____

3. _____

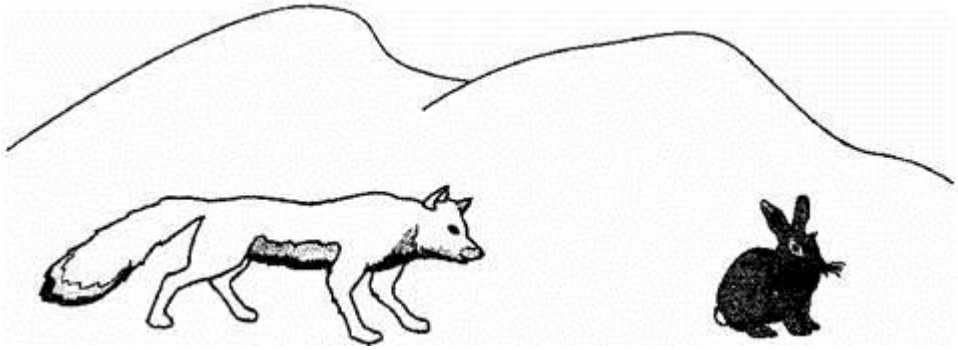
_____

(3)

(Total 5 marks)

Q30.

The Arctic fox is a predator that feeds mainly on small mammals. The Arctic fox is adapted to live in the cold conditions of the snow-covered Arctic.



The Arctic fox has thick, white fur.

Give **two** ways in which the fur helps the Arctic fox to survive.

1. _____

_____

2. _____

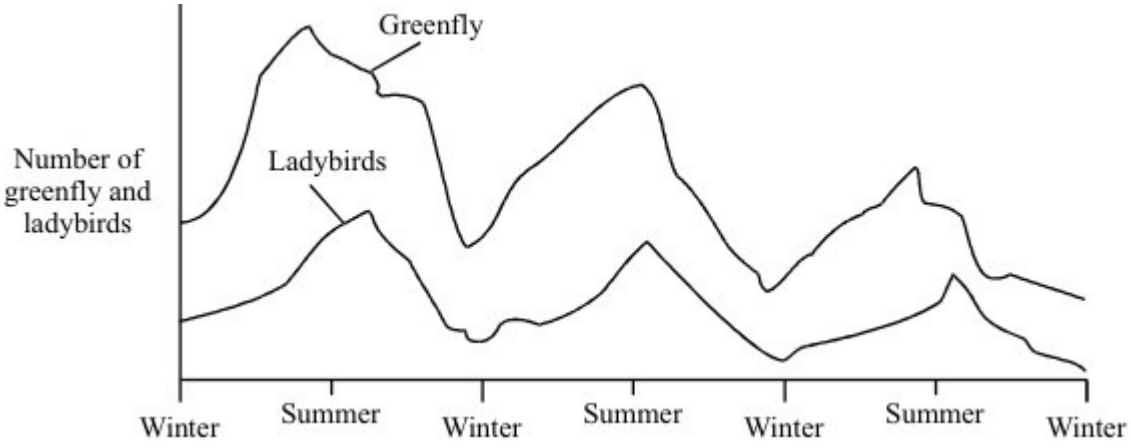
_____

(Total 2 marks)

Q31.

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Greenfly feed on rose bushes. Ladybirds (predators) feed on these greenfly. The graph shows how the population of greenfly and ladybirds in a garden change over a period of three years.



(a) *To gain full marks in this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.*

Describe what happened to the population of greenfly over the three years.

_____

_____

_____

_____

_____

_____

_____

_____

(3)

(b) Give **one** factor that limits the number of ladybirds.

_____

_____

(1)

(Total 4 marks)

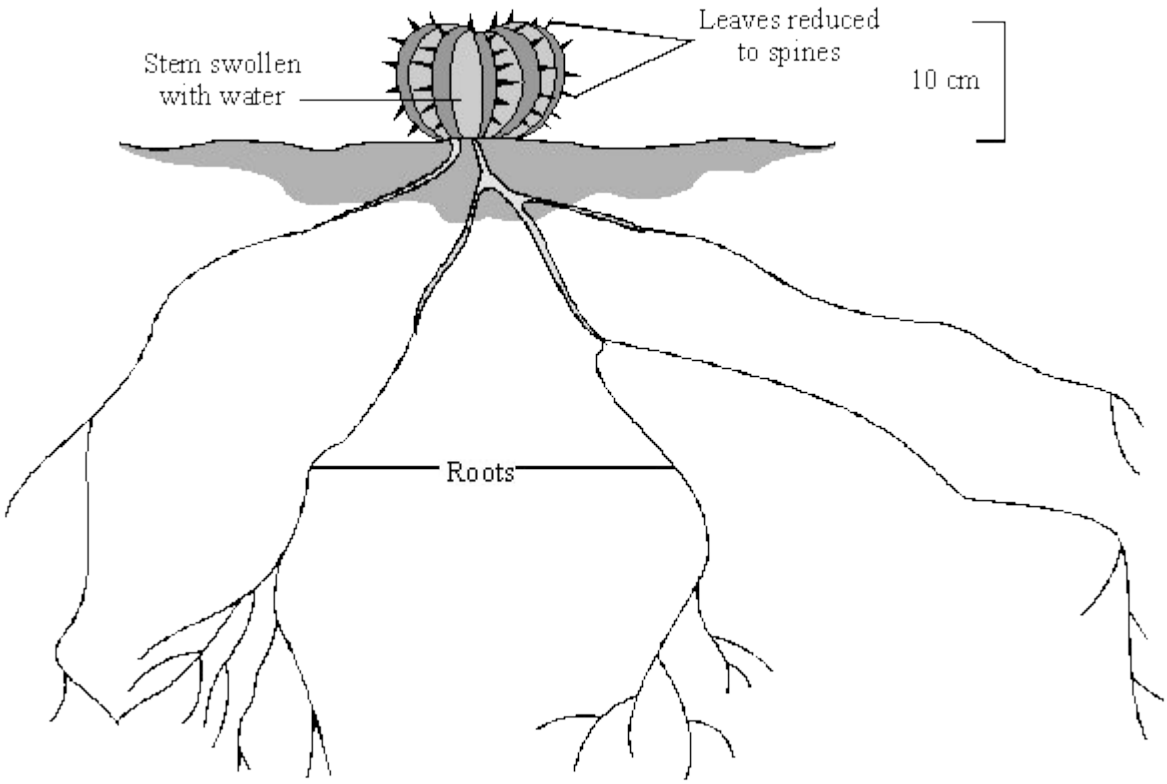
Q32.

The concentration of carbon dioxide in the Earth's atmosphere is rising.

The rise in carbon dioxide concentration may cause more of the Earth's surface to become desert.

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The drawing shows a plant that is adapted to life in a hot, dry desert.



Suggest **two** ways in which the structure of the plant helps it to survive in a hot, dry desert.

1. _____

_____

2. _____

_____

(Total 2 marks)

Q33.

Camels can live in hot deserts.



Read the following information.

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- A camel has big, flat feet.
- A camel's hump is where fat is stored.
- The fat from a camel's hump can be broken down to form carbon dioxide and water.
- A camel has no layer of fat under the skin.
- A camel can go at least two weeks without water.
- A camel can drink large amounts of water in one go.
- A camel has long eyelashes and long hair around the openings to its ears.

(a) Give **one** way that the camel is well adapted to living where there is sand.

_____

(1)

(b) Suggest why the camel does **not** need a layer of fat under its skin.

_____

(1)

(c) Give **two** reasons why the camel can go at least two weeks without drinking any water.

1. _____

_____

2. _____

_____

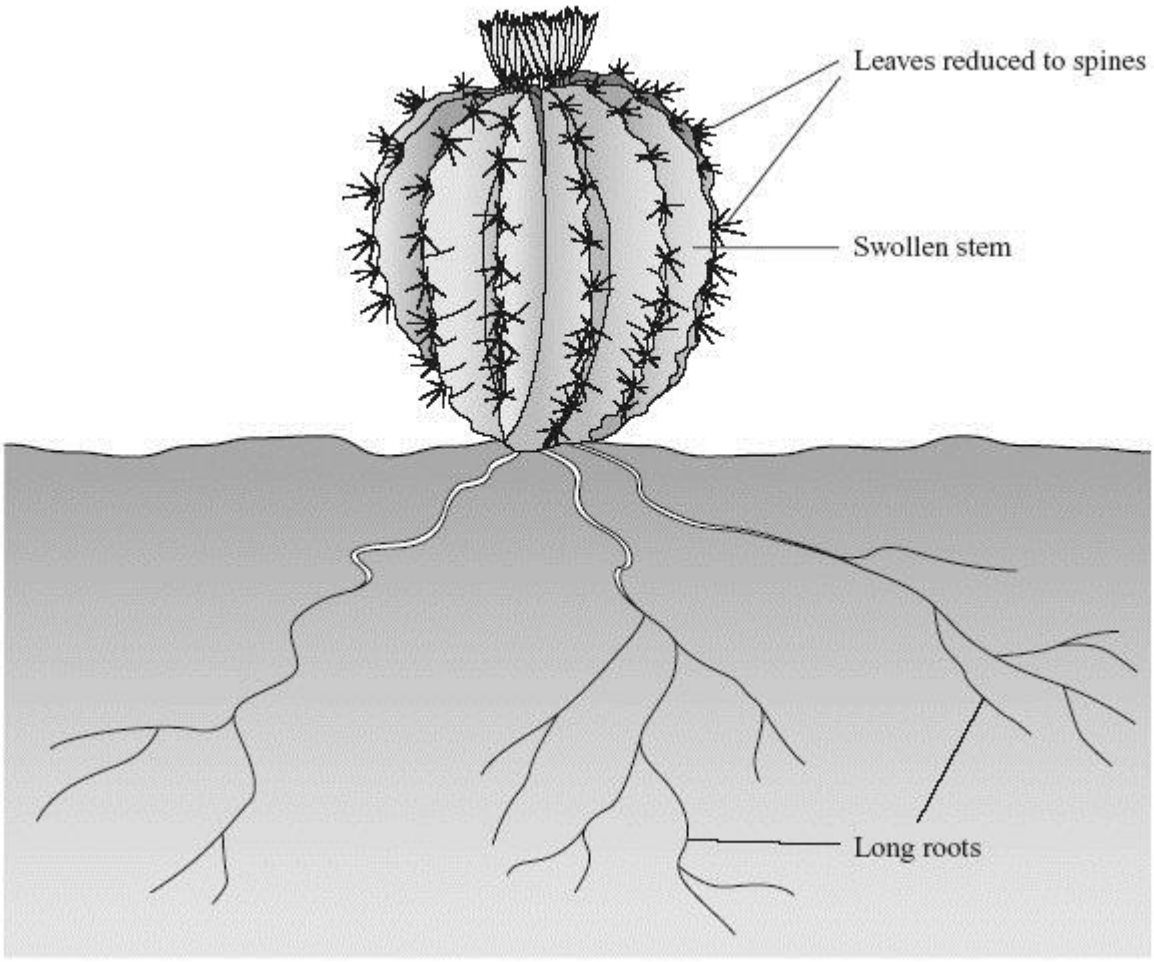
(2)

(Total 4 marks)

Q34.

The drawing shows a plant that is adapted to life in a hot, dry desert.

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(a) Which labelled part of the plant helps it to get the water it needs?

_____

_____

(1)

(b) The stem of the plant is covered by wax.
How does this help the plant to survive?

_____

_____

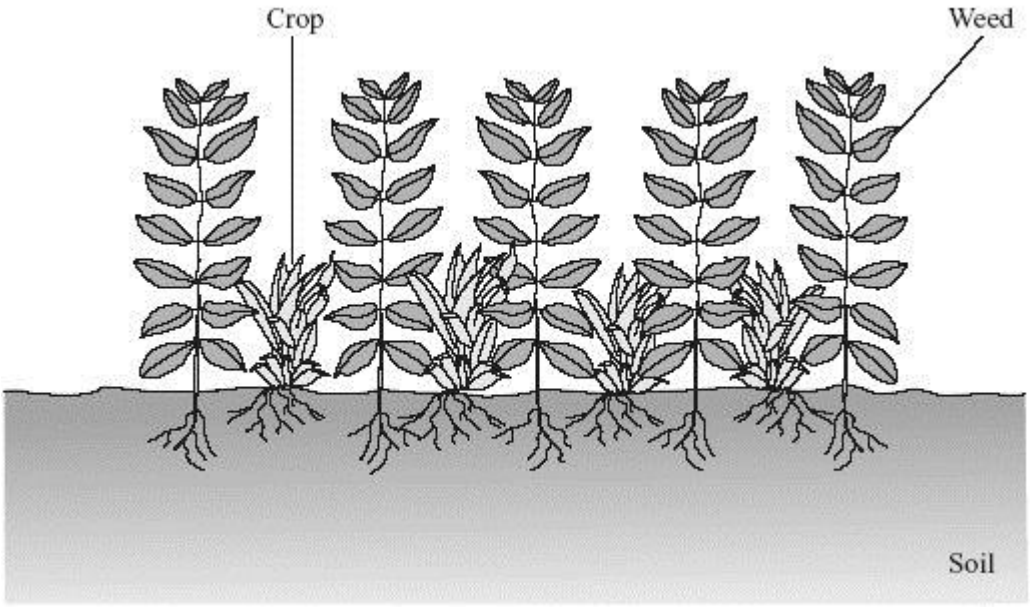
(1)

(Total 2 marks)

Q35.

Farmers need to get rid of weeds because they can stop crops growing well.

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(a) Write down **three** things that crops and weeds compete for.

1. _____

2. _____

3. _____

(3)

(b) Complete this sentence by crossing out the **two** words that are wrong in the box.

Chemicals that are used to kill weeds are called

fertilisers
herbicides
pesticides

.

(1)

(Total 4 marks)

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